SUPPLEMENT.

The Mining Journal,

RAILWAY AND COMMERCIAL GAZETTE:

FORMING A COMPLETE RECORD OF THE PROCEEDINGS OF ALL PUBLIC COMPANIES.

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A SEASONABLE TALE FOR MINERS.

Great Mine Annual Conference,

HELD FROM TIME IMMEMORIAL ON CHRISTMAS EVE.

A Vision.

BY GEORGE HENWOOD, F.G.S.

Having attended a dividend meeting at a popular mine near Redruth, Cornwall, and, consequently, having imbibed a quantum of captains' punch, usually discussed on such occasions, I retired to my couch, full of expectation and hope of some day becoming one of the lucky dogs who have two reasons to rejoice at such scenes. Whether it resulted from the soothing influences of the latter, or from the fumes of the former cause, I shall not now attempt to consider: suffice it to say, I gradually and unconsciously fell, from the memory of the past, and scheming how in 24 hours I should realise for the festive season a similar amount of animal and mental enjoyment, into a lengthened sleep,—when suddenly I heard a salute of one hundred and one discharges, which sounded to me very much like shots fired underground. I gazed about, and found myself in a gloomy cave, which was dimly lit by a miner's candle, stuck to the side of the wall by clay. On recovering from my surprise, I naturally supposed I was in some mine, and sang out lustily, as I heard a confused sound of voices at a distance. After a brief interval, an individual appeared, of unearthly but not repulsive visage, who enquired who and what I was. On being told I represented the Mining Journal, he said, "All right, follow me. You have no companions, I presume, for you, and you only, are allowed to witness the ceremonies about to commence, and your columns only to reveal them to mortal eyes and ears." On this I was conducted into a boarded room, filled by a number of bustling, business-like personages, busily engaged in persuading some younger members to be quiet, assuring them their turn would come by-and-by, that matters could not now be helped, and that next year they hoped to be able to accommodate all; at all events, some of them would be able to gain admission. On enquiring of my guide (who I found had been specially employed to give me information), I was told that these were the committee of management for the great annual gathering, which had been held underground from time immemorial, but had never been witnessed by any human being until the present occasion, when the committee had decided, that as the Mining Journal had so faithfully and correctly reported their diurnal and hebdomadal proceedings, it be empowered to introduce a reporter, and that one of the genii of the metallic world be appointed to carry this measure into effect as he thought fit; that the committee was composed of mines of not less standing than ten years' dividends, were considered highly respectable, and were acting as stewards of the festival, which would be most important and imposing; that the little hubbub just witnessed was caused by a decision the stewards had come to, of not admitting any but progressive mines—that they had made the fact of having sold ores the line of demarcation. This decision had given great umbrage, and caused much discontent, as several of the juniors declared they were rapidly progressing (*vide* their reports); others urged that had they been informed of the necessary qualification in time, they would have astonished some of even the committee by what they were able to do. After a time, on the assurance that it could not now be otherwise, they retired, uttering threats not loud but deep, vowing they would not be excluded next year. No! they would pull their very insides out first!!

The committee retiring, the guide politely asked me to take a little refreshment: this I, of course, accepted, and found it tasted so strongly of count-house punch that it almost awoke me (as I found afterwards that I coughed and turned sides). The guide requested me to help myself to another glass, to make myself perfectly easy and quite at home, chatted familiarly, and asked if my name were Russell? On being assured it was not, he said, "Oh, ah! I recollect, he is of the *Times*." I said, that as this was my first appearance, I trusted he would afford me all the aid he could, which he kindly promised to do, with what ability the sequel will show. My lunch being over, we proceeded through a winding passage, that seemed to me very like a cross-cut, when we suddenly entered a vast cavern, magnificently illuminated by many thousands of miners' candles, in appropriate sockets, and sundry flaming prospectuses. The walls and roof of the cave were tastefully decorated with some sparkling gems and crystallised spars, nuggets, and choice specimens of copper and silver, nickel with cobalt from St. Austell Consols, relieved by a judicious admixture of Midsummer bushes and flags. I observed the portraits of several professors, some drawn by themselves, some painted by each other, many sadly daubed by blacking, and one was injured slightly, it was said, by having been sent over to America some time since, forming a *tout ensemble* at once novel and interesting.

On the side-board were an Old Tol Dish, found near the Indian Queen, containing several rare samples of invisible, imaginary gold from the Britannia and Poltimore gossan, and the interesting specimen of amianthus, or asbestos, discovered in a mare's nest last year at Dowgas, and advertised for sale in the Journal. On the shelf were placed Berdan's machine, Bessemer's process, and some huge nuggets of lead, curiously overlaid with pure gold. At one end of the cavern, in a rise, was stationed the music of the spheres, which discoursed most appropriate airs and overtures during the evening, in a manner which called forth the eulogiums of all present, reflecting the lustre of those professional stars on themselves, which is equal to stating they were praised to the skies.

The tables, which were of most substantial structure, were formed from legs and cap-pieces, with wall planks laid lengthwise the whole extent of the apartment. The company were seated on empty powder-barrels, and each guest was waited on by the wraith of its captain, by which means I was at once enabled to recognise several of the illustrious visitors.

The repast, which was of the most substantial viands, was admirably served up from Cook's Kitchen. The water for the punch and "warm with" was furnished by Boiling Well, that for "cold without" by Carnon Stream. The plate, chiefly supplied by the Tamars, Mary Ann, Trewetha, East Rose, and a few Welsh mines, was certainly very splendid, and said this year to be over 500,000 ounces. The champagne, as usual, was kindly presented by the lords of the manors, among whom those of the Bassets, Buller, and Devon Consols were pre-eminent. Some was contributed by a few young, but I fear over-sanguine and fast mines, whilst Tresavean, Coniston, Laxey, and a few others, contributed sherry and port. The Cornish and Devon mines, much to their credit, liberally offered to "stand the tin" on this occasion, if necessary, for the entire banquet. The cutlery presented a motley mass, each mine furnishing its own. Some few were entirely without; they apologised, assuring the stewards that during the whole term of their existence they had never used such things, their proprietors refusing "count-house expenses." This inconvenience the stewards promptly remedied, by forking out the gastronomic implements, jocosely remarking, that if they had not knives and forks at home, they most decidedly had spoons.

All the preliminaries having been completed, the company were ushered into the spacious saloon, the band struck up a celestial air, and the avenues re-echoed a discharge of twenty-one holes. As pre-arranged, the chair was taken by the venerable Dolcoath, who looked remarkably well for his extreme old age. On his right was his long-lost friend, Great Wheal Vor; on his left his old, very old, Welsh compatriot, Talargoch, forming a trio seldom seen in one company, and may be truly said to be the principal representative sources of the copper, tin, and lead trades. The vice-chair was taken by the Devon Great Consols, on whose right was the lively young Sortridge, and on his left was seated the Virtuous Lady. It is a pleasing feature in this remarkable and wonderful reunion that there were nearly equal numbers of either sex.

We also noticed several delegates from various parts of Yorkshire, Staffordshire, Cumberland, Durham, Isle of Man, &c. The distance of this meeting being so great, it was impracticable for all the mines of these counties to attend; but I was exceedingly disappointed to see so few from Ireland and Scotland. I confess my surprise was great at witnessing so sorry a display of Hibernian energy, knowing, as I do, her vast capabilities.

The venerable Chairmine having desired all to be seated, read a letter of apology from Boscundle, dated Charlestown United, Dec. 10, saying he begged to be excused, in consequence of the decease of poor young Tristrem, from sheer poverty, a cause which he feared would prevent the attendance of some of his neighbours. "But," continued the worthy old Chairmine, "I am glad to see so many of the Crinnis family present, and feel honoured by the presence of Pembroke, though circumstances may, perhaps, be below Par.

The party then discussed the merits of the sumptuous feast, in a manner that would not have disgraced their mundane representatives, pledging each other with the most cordial feeling and good nature. It was highly gratifying to see the jolly old Phœnix asking the Queen of Dart to take wine with him, and the Manx, Beckwith, of the Foxdale, politely complimenting her of Sheba. The sisters Kitty, Betsy, and Harriett, St. Agnes, also received a great amount of attention; but the favourite belles of the evening were the two ladies Frances, who reside near Carn Brea. It would be tiresome to enumerate all the little *vis-à-vis* compliments, or to record all the names of the guests; I shall, therefore, at once proceed to describe the scene on the cloth being drawn, when the centenarian Chairmine rose to propose the toasts and business of the meeting, the whole company left their seats, and received him with a shout, compared with which the shout of the Hills would be but a zephyr's whisper. The elves of the place (who from their appearance I supposed were disembodied miners) fired a salute of one hundred and one two-inch holes, and the orchestra struck up their loudest strains, producing a sound such as, perhaps, mortal ear never experienced since the days of Tregeagle. In this demonstration the efforts of Ding Dong, Hallenbeagle, Tin Tang, Bal Dhu, and Nangiles, were most audible.

After silence had in some measure been restored, the venerable Chairmine spoke as follows:—In again addressing them on the anniversary of of an institution as old as the United Hills (hear, hear), he could not but congratulate them on their greatly increased numbers and respectability of appearance: but it gave him unspeakable pleasure to see the countenances of several of his old comrades; it made him feel young again to have on his right his old friend in his old position. (Hear, hear, and cheers.) He was indeed proud to see him at the top of the list in his own department. He hoped at their next meeting to congratulate another old neighbour on being second. (Hear, hear, and cries of Pedn-an-drea, Pedn-an-drea!) They were right; he hoped to see that mine take her proper position. He would give his reasons for such wishes by-and-by; but perhaps he had better do so now. Well, then, he trusted Pedn-an-drea would assist his neglected neighbours, Sparnon and Penstruthal, both of whom had seen better days; and he felt sure that any attention shown them would entail a blessing on the giver of it. He hoped also, and had reason for it, too, to have his old Busy, Gwennap, and Chacewater friends in wonted activity. The circumstances of Day United, with Ellen, were causes for joy, as he understood they were both improving. He also rejoiced to see that Great Alfred, after all, was turning out a good mine, and hoped his example would be followed by his numerous family, and act powerfully on his neighbours, poor old Herland and Relistian, as also on the Rosewarnes, who resided in that locality. He trusted to see Miss Charlotte, of St. Agnes, accompany her three sisters, now present, at the next anniversary, and charged them with his sincere wishes for the presence of their first cousins, Tywarnhaile and Towan. (Here the brothers Perran United swore by St. George they would see the ladies home, as they lived in the neighbourhood, and would undertake the delivery of the errand in the ladies' behalf.—Cries of Order, order.) The worthy Chairmine said he should not detain them long, but merely say that during his long, very long, life he never saw better prospects before them all. The standard was rising fast, and promised a fair remuneration for their produce. (Hear, hear.) In the midst of their prosperity, however, they should all take care for the future. He must call their attention and sympathy to a grand example of dignified retirement, but, at the same time, their number would be deprived of a member, and an ornament not easily replaced. A rumour had reached him that the Great Consolidated were about to retire, from old age and exhaustion. He hoped they would again revive, and trusted that by the aid of Ale and Cakes, and the attention of the noble family of Clifords, they would receive that Comfort no other consolation could bestow. He hoped all present would enjoy themselves. If they had any complaints to make or suggestions to offer, to do so frankly and unreservedly, as he should be glad to hear them. It was only by such meetings as these they could make their respective views and feelings known. He felt disposed to Harmony and Hilarity, therefore would propose, Continued health and prosperity to their most noble Vice,—who set them all a good example, and who, by right of standing, ought to have occupied that chair, but that prerogative, he found, could not be delegated by age. To say anything eulogistic of the Devon Consols would be to paint the lily and scent the rose, and be an insult to their understandings: suffice it to say, they had astonished the world, and astonished themselves, he believed; in fact, he felt assured they would be handed down to posterity in the Mining Records by Mr. Hunt, as the benefactors of mankind. He trusted they would be spared many years to wear the kindly gossans that surrounded their youthful, noble brows. (Rapturous cheering.—Air, "Hail, smiling morn.")

The Devon Consols rose amid loud plaudits, and modestly said they were not aware of having done anything deserving of such encomiums. They only did their duty—viz., the best they can for themselves, by judicious management. They were not under the Cost-book System, it was true: they afforded a practical illustration that a mine under any system, if honestly and ably conducted, would end well. They read a very instructive lesson to the younger mines, warning them against mismanagement, and meddling shareholders, who did not know what they were doing, which they assured them was more destructive than had been generally supposed. Such causes had once nearly brought their splendid property to the verge of bankruptcy. They felt all the pleasure the Chairmine had so ably described at their increasing numbers and improved standing, still they had one thing to complain of, and, as this was the time and the place, they should state what their grievance was,—they thought that all would admit it just: it was the adopting family names and titles without authority, thus causing such confusion that the public could scarcely tell which was the parent mine. They were surprised, a short time since, on looking over the Mining Journal, to see so many had taken their family name. They were surprised at such assurance, as the would-be Devon Consols, they feared, had neither the "tin" nor the "brass," to keep the style and dignity of the title up. Ambitious mortals might as well assume each others distinctive honours. For instance, Jemmy Sprague or Mr. Portreeve Nicolls, both rising men in Tavistock, might as well arrogate the nobility of Bedford, and transform themselves into Western and Southern Dukes at once. They thought it was wrong, and hoped it would be discontinued. They concluded a neat speech by proposing "Success to the Virtuous Lady." (Air by band, "Gentle Statira.")

This toast having been most warmly received and honoured, the lady fair modestly requested her cousin Franco to return her great obligations for the compliment. This the worthy gallant did in an elegant manner, alluded to the quantities of virgin copper produced by the mine, and delicately hinted, that though there had been lately some misunderstanding, it by no means argued the lady had not a good footing, as could easily be proved, if necessary, by the "Lady's Slippers,"* which had been the surprise and envy of every mine, and which he challenged the world to rival. (Cheers, laughter, and cries of "Capital" from the Tavistock mines.)

The Chairmine next gave "Old Acquaintance," and his old Welsh friend, who was as true as "Flint" itself, Old Talargoch. (Air, "Auld Lang Syne.")

The old gentlemine, who wore the "Leek," and was decorated with the grand hydraulic order of Trevethick, seemed overcome by the burst of acclamation as he rose. On recovering, from speaking low, and in Welsh, I was only enabled to understand a part of his energetic guttural speech. I was, however, enabled to distinguish that he regretted leaving several of his companions at home, who were confined to their strata. He regretted to see that many of those present were unduly labouring under the same terrible complaint, which he feared was on the increase;—he meant that brought on by severe and constant exposure to heavy dues. (Hear, from all sides.) This complaint, he knew from experience, had a most depressing effect on the energies and endeavours of every mine: it chilled their ardour, cramped their vigour; in short, paralysed all their efforts. It preyed on their vitals, brought on consumption, decline, and death. (Hear, hear.) The lamentations of several sufferers had reached him from South Wales—aye, from the mountains of the far North—from Cumberland, Durham, York, from the Helvellyn to Brandon Walls, from Craven Moor to Halkin Mountain, the groans came o'er the waves; even at his own doors this fell destroyer stalked forth. This was too bad, and could not be long endured; if no remedy could be found, mines must emigrate, like other interests; several nostrums had been tried without any improvement; "Steward's exhausting plaisters" had been applied instead of "Lawyer's phlebotomy," but did injury instead of good. They had applied to the lords for redress, but in vain; they had only insulted them hitherto; a better time he trusted was coming, when they would look to their own interests, and not let the mines perish without a chance; for his own part, though at so advanced an age, he was as good a mine as ever, and hoped to continue to meet them at many happy anniversaries. On sitting down he was loudly cheered for his valuable advocacy of his neighbours' wrongs.

After which, a mine from Illogan begged any mines who might be labouring under such afflictions to take a box of valuable ointment, prepared by the late Lord de Dunstanville, which he assured them had entirely renovated him when in the last stage; he believed (if he had not been misinformed) the Chairmine attributed his astonishing virility and elasticity to the frequent use of this invaluable remedy, which was literally worth its weight in gold; for, like Mercy, it enriches him who gives as well as him who receives; it is thus doubly blessed; so grateful had the mines in his neighbourhood been, that on their recovery they had presented the inventor with its weight in silver, as a testimonial; and the Elves, to their everlasting honour, had erected a noble record of its invaluable services in their neighbourhood.

The Chairmine here said it was quite true; he himself had largely contributed to the testimonial, and he trusted every mine present would have reason to bear such just testimony to its powerful effects. (Hear, hear.)

The Allenheads Mine, being one of the Heads of the mining district of the north of England, alluded to by his Welsh friend Talargoch (if not interrupting the harmony) begged to be allowed to say they had great hopes in their locality, as they had a new Bishop who, he understood, entertained liberal and exalted principles. As he, and the Dean and Chapter, were lords of most of their *northern* manors, he hoped the Bishop would make the Dean turn over a new leaf, and give them a verse out of a new Chapter, the only one he had ever heard was the same; he feared they had been so long accustomed to tithe there would be some difficulty. He should most certainly send the Bishop half-a-dozen boxes of the Dunstanville Ointment for the use of his poor neighbours. He would like to be informed if any one present ever heard of an ointment for opening landlords eyes? (Hear, hear.) This was immediately met by Tresavean and Fowey Consols simultaneously rising, and calling out "The Universal Cerate or Golden Ointment; lay it on thick, as we did, and the effect is marvellous!"

An impatient member, who I soon found was one of the Russells, started up, and desired to state a nuisance, to which he had, he feared, in common with many others, been subjected, that was, the opinions of mine inspectors; he had seen it estimated that he had been visited by thirty or forty; he himself had never kept any account of them, but he was sure their name was "Legion" (in more senses than one), for they played the very "Devil" when they entered him; singular as it might appear, no two corresponded. Some said he had no lodes, no gossan, no walls—others that he had loads of gossan and nothing else. Now, he had raised and sold copper to their discomfiture; such varied opinions did great mischief by mystifying shareholders. To make any sense or reason out of such "Reports" would puzzle a witch, even the "Witch of Endor" himself, who he firmly believed was "Old Nick:" for his part, he would rather bury himself in oblivion, or throw himself into Gunnis Lake, than submit to such degra-

* Pseudomorphous crystals of native copper, of extraordinary beauty, found only in this mine.

dation. If he lived to be present at the next anniversary he should propose that the tables be turned, instead of the inspectors enquiring into the capabilities of the mines, the mines should first ascertain the capabilities of the inspectors. (The whole company here rose and shouted "Bravo," and cheered the speaker.) The Guide nudged my elbow, and said, "that was the smartest thing he had heard uttered by a RUSSELL." The speaker said he was a relation of the same family as the DEVON CONSOLS, and in close connection with them; he coincided with every word that had fallen from his excellent friend, particularly when he referred to busy-body meddling shareholders: their interference, and the reports he had alluded to, were as useless and profitless as the late enquiry whether coal was coal or not; one party proving coal was coal, and another that it was only Torbane mineral; or, as useful as the solution of the question, whether PETER TAVY and MARY TAVY, both residing in Devon, could with propriety be called Cornish cousins or cousins German. This happy illustration of mining engineers' reports elicited roars of laughter.

The Chairmine now called their attention to harmony. He was glad to see them uniting so much good advice and sound reasoning with their hilarity. As the most prominent individual instance of the restorative system yet known was present, he would propose that most astonishing monument of industry, capital, and energy the world ever saw, GREAT VOR.

The noble mine, on rising, was received in solemn silence, the majesty of his nobility and prodigious dimensions overawing all response. After a brief period, he said he rejoiced indeed to be one of their number again; but, judge of his surprise on his resurrection, after a lapse of 20 years, to see the world so changed; to see his old friend, the Chairmine, as fresh and vigorous as ever, without taking any rest whatever from continual work; to see his next door neighbour, GREAT WORK, alive and prosperous; to find poor old NEPTUNE in decadence; and TREWAVAS, once so promising a juvenile, now in the workhouse, and treated with utter neglect. He had called upon old REREH and spent an hour with him, intending to have visited BALNOON, on his way to ST. IVES CONSOLS to advise with poor TRENWITH, who he feared was in difficulties; but to this he would not now refer. He came home by the north road, and was glad to see TRELYON, MARGARET, and MALGERY looking so well; indeed, if the company only looked on their charming faces, they could judge for themselves. (Hear, hear, and laughter.) The ladies need not blush at the compliment; everybody knew they were good looking. He intended to have gone to St. Just to obtain tinners, but had been so busy erecting his machinery that he had been unable to do so (here he significantly nodded to BALLESWIDDEN, and told him to keep a drop in the bottle when he called, to which the latter shook his white locks), and then concluded by thanking them all for their kindness, jocosely asking BOTALLACK Who stole the COCK?

BOTALLACK said stealing was out of the question. COCK had been on the roosting perch for some time, and as he feared he might LEVANT he had taken him under his arm and secured him. (Much laughter.) He should be happy to see the VOR at St. Just, the BOYS of which place, with those from BOSCEAN, BOSCASWELL DOWNS, SPEARN, and other mines would form a procession to meet him at PENZANCE CONSOLS, and conduct him to Churchtown in a manner becoming his high standing. (Cheers of approbation by the western mines.)

The Chairmine then called on the SISTERS CARADON for a song, which being declined by them (and properly, too, seeing they had partially been educated on Quaker principles), young CRADDOCK offered to sing for them, and gave, "How happy could I be with either, were t'other dear charmer away." This allusion caused a titter, as it is currently reported there is a little sweet intrigue on the *tapis* between CRADDOCK and the wester nMiss CARADON. TRELAWNY was heard to say CRADDOCK would take the two, rather than have neither; if he would not, TRELAWNY would.

The Chairmine now proposed the great mining maxim, "Wheels within wheels," connecting with that sentiment the great LAXEY MINE. (Band, "Freemason's March.") This toast was drunk with masonic honours.

The LAXEY here expressed his thanks for the honour the MANX deputation had received. He supposed he must consider himself a he mine, as he was essentially a Jack mine; if so, PENCORSE and FRONGOCH must be of the masculine series. But to what the Chairmine alluded when he said wheels within wheels he was at a loss to know; they had no secrets in bringing out their mine to which such allusions could attach. The Chairmine was a deep old file, as all knew. There was something meant, more than an innocent, unsophisticated mine like himself could fathom. True, he had the largest wheel in the world, and might contain wheels within it, most certainly; or, did the chair mean his turbine, that nearly killed the captain and manager on witnessing the first experiment. If that were the wheels within wheels alluded to he did not care. He was above all suspicions. He had long paid handsome dividends, and hoped long to do so. All he could say was, if the Chairmine would honour the Island by a visit, he would give another *fête champetrè*, as he did when he opened his wheel, when all the dignitaries of the island were present, and the wine bill alone was between 200*l.* and 300*l.* He concluded by proposing Miss EMMA (Buckfastleigh), and the ladies. (Band—Air, "Here's a health to all good lasses," the company joining.

The "ladies" having been duly honoured, NORTH ROBERT rose to return thanks on their behalf. He assured them they paid the Devonshire lady mines no compliment; for, had the champion of the Isle of Man exhausted eulogy itself, he could not exaggerate, so transcendent were their merits. The EMMA having been selected, gave him great joy, not jealousy, as many might perhaps be inferred, if he declared he had "honourable intentions" towards the lady, who, he assured them, and he assured himself, would fulfil the great expectations, which her favourable *début* in the ticketing list had excited. He was proud to boast of the Devonshire followers of ANNA MARIA, whose fame was as wide-spread as lasting, and who had realised as handsome a fortune as Jenny Lind. The QUEEN OF DART, too, he heard, had formed, or was about to form, an alliance with a young KING, an event which would be a source of great joy to the mining community. He expected that event would come off in time for their next anniversary, when he hoped the royal pair would be present, and show the coinage of the sovereigns in which they will be paying their dividends. (Hear, hear.) "To young men about to marry" he could offer a capital opportunity—a real heiress, and no mistake, with plenty of tin; and would propose, PROSPER WHEAL CAROLINE. (Cheers.—Song, "She's all my fancy painted her.")

FRANK MILLS was rather astonished at the latter part of the speech of ROBERTS, as he must be always underground or deaf not to have heard the news; but, perhaps, he was so engrossed by his attentions to, and caressing his EMMA, that he paid no heed to anything else, or otherwise he alluded broadly to him. He should have known he had the CARPENTERS at work at Sydenham, where he hoped to dwell in CONCORD and FRIENDSHIP with his neighbours. He had been a hard-working young mine, and was not ashamed of it. His circumstances, he was proud to own, warranted his ambition; and he hoped, by the time the QUEEN OF DART was united, and EMMA was married, he and his CAROLINE would be in a position to receive either party in a suitable manner. (Cheers. —Band, "Haste to the wedding.")

The Chairmine said it would be well to be merry and wise, and to remember the advice of the Vice, who told them management and conduct was the golden rule in every system; therefore, as the evening was advancing, and he was an old mine, he begged to retire, assuring them that was the happiest moment of his life. He did not wish to disturb them, but they really must excuse his withdrawal with the ladies and his older friends. He would leave those who remained to do as they thought fit, but previous to doing so he had two customary toasts that must be honoured—the "Three Cornish minerals—Fish, Tin, and Copper." (Bursts of of laughter.) What did he say? Fish. He begged pardon, but it came out naturally. He meant Lead. It was pretty evident, he thought, that it was time for him to leave. And "Our Noble Selves." (Hear, hear, and cheers.—Band, "The Fine Old English Gentleman.")

The chair was then vacated, the occupant being accompanied to his railway wagon by most of the company, amid their good wishes, uproariously singing "For he is a hearty good fellow, which nobody can deny." The majority of the older mines followed his example. In the anteroom (changing-house) they wrapped themselves up comfortably in their ore-bags and underground clothes, put on their hat-caps, with a candle in each. Some went home in their trams, some rode the whim-horses, others were conveyed in their own one-wheeled carriages, much to the amusement of the bystanders. All proceeded on their way but one jolly old toper, called TOLGUS, who returned into the room, singing "We wont go home till morning." He was immediately seized by TREFUSIS on one side, and TRELEIGH on the other, and thrust into the vacant chair, *nolens volens*, amid the uproarious glee of the now unrestrained company, who shouted at the top of their voices, "OLD TOLGUS for ever! Bravo, TOLGUS! Hurra for Redruth!" A round of cheers was then given, led by one of the ROSKEARS.

OLD TOLGUS having been duly installed, commenced by philosophically reasoning, in Redruth style, "'What can't be cured must be endured.' Stop, souce, lemme see and take stock fust." Looking round, he exclaimed, "Well, there's as pertty a lot as I cud wish to see. A fine chance for the Devvil to thraw us net, sure nuff. We'll now begin for to spend the evenin our awn way. Bring here the tools; I'll brew the punch meself, and maken strong. No lady's sweet trade for we. Love the straingers taste un, and see what count-house punch is like when us made fitty. Here, Tender, put some coils of fuse on the table. Do any ovvey smock? cose if you do, well have some powder for they that likes it strong, an some engine-shag for they that likes it mild; and, Tender, is there henny meat left? Ef there is, take core avven, for we'll have a ST. AUBYN'S day after this, ef we never have another."

During the preparations for smoking the conversation was so general and confused, I could not catch anything worth recording.

At length TOLGUS rose, and, without preface, called on SOUTH SEATON for a song, who begged to be excused, as he had a bad cold, caught coming home late from CAMBORNE VEAN; he dared say PENDARVES or TREMAYNE would for him, as they were both good singers. PENDARVES said he would do so with pleasure, and, in capital style, gave "Malbrook is gone to the Wars," accompanying himself on the hand organ lately in Camborne Church.

WHEAL LOVEL said, to keep the game alive, and as one volunteer is worth two pressed men, he would lead a trio, if TREVENNEN and PORKELLIS knew any nigger melodies, and WENDRON CONSOLS would blow the TRUMPET. This curious combination, however, after immense merriment, went off well, as each performer used his sets of stamps instead of castanets or bones, all the company admitting they were powerful and capital substitutes. Several songs were sung, and attempted to be sung, but I heard the exclamation, "Try again! Try back," several times. As the hour for breaking up approached their mirth grew "fast and furious," until a quiet member, called OWLES (who till now had been silent), hoped they would remember there was a mortal present, and that they would allow nothing to occur to mar the good opinion of mines his report must create. He for one should propose a vote of thanks for his attention. This was seconded by the OLD BASSET, and carried, as was a resolution, "That a copy of the MINING JOURNAL be ordered by every mine, that they might see the report was a correct one, mining reports being often a tissue of inventions, emanating solely from the author's brain."

On being called to the table, the Chairmine said, "Wen you next send anyboddy, tell 'em to send you, as some of they people from Wales an the North will be here, an bring some of their black brothirs, with their black diments in their pockats. You a Cornishman, arrey?" On being answered in the affirmative, he said, I thought so; take hold and drink. I was about to return thanks on behalf of myself and my employers in the most elegant language, and was just stretching my hand to seize the glass, when I felt a gentle tap on my cheek, and heard my wife say, "To-morrow is Christmas Day, and you've not sent home the turkey." I found I was awake, and lo! all was a dream!! Such is life!!!

MINING AND IRONWORKING IN PRUSSIA.—No. IV.

[FROM OUR OWN CORRESPONDENT.]

I have already stated that the Oberhausen, Mülheim, Witten, Hagen Railway would be continued from Hagen to Siegen (about 40 English miles southward, which line will open up a communication with the highlands of Westphalia and Siegerland, both rich in mineral wealth), abounding with valuable ironstone, lead, copper, and zinc ores, &c., which were worked to a small extent some centuries since. At that period the proprietors confined themselves to smelting by charcoal (producing the renowned Siegerland raw steel-iron, and the superior charcoal bar-iron, branded "Osemund"), which will be continued until the supply of wood fail. The carts which carried away the raw steel, raw iron, and bar-iron, brought up into these highlands pit coal produced in the Westphalia coal field, and thus supplied the forge mills, blacksmiths, and householders of Upper Westphalia, whilst Westphalia converted the raw produce of Siegerland into refined steel and sheet-iron, by charcoal and pit coal, according to the uses for which it was intended. During the last 30 years, however, many puddle works, forge mills, and rollers have been erected, and coke has been mixed with charcoal as fuel by some blast furnaces; and in other branches of the manufacture, from the difficulty in obtaining charcoal and wood, pit coal has been much more extensively employed.

But at last the whole energy of these countries has been awakened, and the new Hagen, Siegen Railway will give a further impulse to the development of the mineral wealth of the Westphalian highlands and Siegerland, by furnishing both mountains and vales with pit coal and coke at lower prices, thus enabling them to refine the greater part of their charcoal and coke iron on the spot, and to send their masses of superfluous iron ores to be smelted in the Westphalian coal district, thereby greatly increasing the Westphalian iron manufacture, and the consumption of their pit coal and coke. The far-famed "Müsener Stahl Berg" (Steel Mountain) alone will recall the Siegerland mineral country to the memory of every Englishman connected with the iron trade. Siegerland will also be connected by railway with the Rhine towards the west, but as far as its iron ores are concerned there would be too great an amount of competition with the Upper Rhinelands and the Duchy of Nassau to permit of export to that river, and the railroad will be the principal aid to the development of the wealth and commerce of Siegerland, as the road cart was formerly.

There is, as well as in the Westphalian coal district, an immense coal trade, and extensive mining operations going on upon the Prussian-French (south-west) boundary in the Saarbrücken country belonging to the Rhine province of Prussia. Here, in 1848, there were raised 282,703 fuders of pit coal (one fuder being equal to 1½ English ton) and, in 1855 this had increased to 961,977 fuders, owing to the great export trade carried on with France; and the output is still increasing, and much higher prices are being realised. The Saar coal and coke is also sent down the navigable river Saar, and enter into competition with the Westphalia produce upon the Upper Rhine, but the quality of the coal and coke is inferior to that of Westphalia. In the Saar and Moselle countries there are also large ironworking establishments producing fine bar-iron, &c., nearly equal to Siegerland (Osemund) bar-iron.

At Seyn, near Neuwied on the Rhine, there is a Prussian Government ironworks, with blast-furnaces producing charcoal and coke iron, connected with a large gun foundry, boring mills, &c.; and many ironworks are established on this river down to Ruhr Ort, on the Rhine, and extending far into the country on both sides. The Rhine, again, is the medium for the transport of large quantities of iron ores from Nassau to Prussia. These ores are shipped down the river to Ruhr Ort, and thence up that river about 70 to 90 English miles, to be worked on the boundary of, and in, the Westphalian coal district. The recently-formed Phœnix Iron Company alone carried for their own use, and by 47 vessels, belonging to themselves, in one year (1855-56) 28,233,020 lbs. of iron ore from the Rhine and Moselle districts, 42,498,260 lbs. from Weilburg, 102,805,600 lbs. from Diez, and 35,365,640 lbs. from divers other places. This produce, with other ironstone, is converted into pig-iron at their establishments at Ruhr Ort, Borbeck, &c.; the pig-iron, in its turn, being worked into malleable iron in their works at Ruhr Ort and Eschweiler Aue, near Aix-la-Chapelle. This company produced in the year a total quantity of 67,627,655 lbs., or about 30,000 English tons of malleable iron; and from this about 23,686 tons of rails, 6,247,754 lbs. of sheet iron, 1,529,774 lbs. of hoops (common), 944,558 lbs. of ditto (puddled steel), 1,332,402 lbs. of axes, and 4,517,634 lbs. of sundry other articles. The profits cleared in the same year, according to their balance-sheet, to June 30, was 438,884 thalers, and there was also a reserve fund of 79,062 thals.; the company's produce of malleable iron being 31,149,840 lbs. more than in the preceding year. Westphalia mining is benefited greatly by these operations, as by its coal and coke, 92,552,713 lbs. of pig-iron, and 32,342,307 lbs. of malleable iron were produced by this company, about one-third of the ironstone used being Westphalian. The Deutz (Cologne) Giessen Railway, and the Lahn Railway, as its continuation into the interior of Nassau, will also further increase the success of this trade.

In the north-west of the Rhine province are the old established and well known iron, lead, copper, and zinc works of Schleiden, Düren, Eschweiler, Stolberg, Aix-la-Chapelle, Eupen, &c., which, together with the large foundries and machinery and mechanical establishments are supported by extensive coal mining operations in this district. On the boundary of Belgium, again, are the Altenberg (Vieille Montagne) zinc works, which are in a very flourishing condition. The whole iron industry of this part of of Prussia is much indebted to Messrs. James and John Cockerill Brothers, two Englishmen, the latter of whom was also the founder of the great Seraing Iron-Works, in Belgium.

In the provinces of Upper and Lower Silesia, which are situate in the south-east of Prussia, bounded by Russian Poland, mining an working is also making rapid progress. Private individuals an panies are very active, and besides the Government ironworks a stadt Eberswalde having already fallen into the hands of a private dual, the Minerva Corporation has offered the Governm'nt the 3,000,000 thalers for the extensive but unfinished ironworks, the K Hütte, near Gleiwitz, in Upper Silesia; but the Silesia Vieille Mo Company, which is principally a zinc-working company, has also an offer of more than twice that amount—7,000,000 thalers, or 1,050,000*l.*—and as soon as the negotiations shall have been closed, purchase made, the royal ironworks will have nearly disappeared, vate mining will be making additional progress. The Prince of has also offered a sum for another ironworks, near the Austrian boun Coals are, I may add, both good and abundant in Silesia. The mi wealth and industry of all the other Prussian provinces I will refer future letters, thus giving the general outline of the special min ducts of the whole country, although the other provinces are not immediate interest to the English public. Berlin, the Prussian I must state is in the east of Prussia what Aix-la-Chapelle and E are in the west—the principal place for the manufacture of machinery mechanical works, as steam-engines, boilers, wagons, tenders, &c.— has small malleable iron-works and large foundries; many thousand men being employed in these operations: Silesia, Westphalia, and fore countries supplying the place with iron, steel, coke, and coal, by railw and the navigable river Oder.

This brings me again to the Rhine province and Westphalia, and to great manufacture of hardware and cutlery in these provinces, their ir works, blast-furnaces, forge mills, puddling furnaces, rollers, machine and mechanical establishments, having been already alluded to; and this manufacture Prussia competes, not only in the German trade, but all the markets in the world. The county of Mark, in Westphalia, the Duchy of Berg, in the Rhine province, possess, with their manuf turing towns and densely populated country districts, all the elements securing success in the said manufacture. The principal places in county of Mark are Iserlohn, Altena, Lethmathe, Limburg, Schwe Hemern, Sundwig, Neuenrade, Plettenberg, Lüdenscheidt, Kierspe ver, Rönsahl, Breckerfeld, Hagen, Herdecke, Enneperstrasse, Gev Voerde, Rüggeberg, Schwelm, Vollmarstein, Sprockhövel, Ha Blanckenstein, Witten, Bochum, Dortmund, Hoerde, &c.; and in Duchy of Berg, Solingen, Remscheidt, Burg, Wald, Cronenberg, Gräfr Sonborn, Elberfeld, Barmen, Rittershausen, Ronsdorf, Lüttringhaus Lennep, Rade vorm Wald, Hückeswagen, Wipperfürth, Wermelskirch Mettman, Neviges, Wülfrath, Velbert, Langenberg, Werden, Steele, Es &c. In each of these towns and country districts, the manufactur hardware and cutlery is carried on to a considerable extent, afford the best evidence of the enormous market there is for finished iron steel on the spot, and will fully explain why Prussia imports such l quantities of pig-iron, as stated in a previous letter, in addition to emp ing all her iron produce.

I may venture to predict that there will also be a greatly increased mand for finished iron and steel as the production of pit coal and raw iron and steel augments. As the stars are dispersed upon the firmam and appear large and small on a bright dark night, so you find disper the dwellings of the inhabitants of these fine and rich countries, form towns, villages, and great and small country estates, in consequence of divisibility of the soil. In every part of these mountains, covered w human colonies, you hear the hammer and anvil, and the file; whilst the vales you discover forges, grinding and polishing mills, wire-drawi rollers, smithies, &c., not to mention the great business carried on in manufacture of brass, zinc, glass, wool, cloth, linen, cotton, silk, s wares, paper, &c., nor the spinning, bleaching, weaving, printing, yarn colouring establishments, and the "Turkey red" manufacture, all of which operations coal and, to a greater or lesser extent, iron steel are employed.

You will now be more aware of the importance of the Westphalia district, from its situation in, or immediately adjoining, the great ma facturing districts for its whole length, from east to west; whilst in coal district, and in the manufacturing districts of Mark and Berg, th have recently been discovered large and numerous beds, seams, and depo of the most valuable ores, as spathose ore (natural steelstone), irongla red and brown hematite ores, grey, clayband, and blackband ironsto manganese, &c., in inexhaustible quantities, and into this part of Rhi land-Westphalen the greater part of the Siegerland, Upper Rhineland, Nassau ironstone will be sent and converted into pig-iron, malleable i &c., by the Westphalia coal, coke, and charcoal. It is to this part of Pru I would particularly direct the attention of your countrymen, capitali and mining engineers, before it is too late to partake in its mining o rations, and all these rich and extensive mineral fields have passed f the original proprietors into the hands of other parties. In my nex will show the cause of the improvement in the mining and mineral p duction of Prussia.

PROGRESS OF THE STEEL MANUFACTURE.

It has now been proved beyond doubt that an excellent quality of c steel can be produced direct from the crude pig-iron, and the honor of venting the sole process hitherto found capable of practical application undoubtedly, due to Captain Franz Uchatius, of Vienna. At the Impe and Royal Arsenal of that city experiments of the most conclusive c racter have been made, and the results obtained surpassed the most s guine anticipations of the inventor. These experiments consisted in fo ing, welding, and hardening the steel, and in testing its powers of res ance and elasticity, and were considered ample proof of the imme advantages likely to accrue from the discovery to every branch of the st manufacture. As an improvement upon wrought-iron for tyres, its empl ment has been very successful; the resistance being stated to be such th the fracture of a tyre is almost impossible. In consequence of the result obtained, a joint-stock company, with a capital of 5,000,000 florins, h been formed for carrying out the invention in Austria, and we understa that nearly the whole of the shares have been taken by the Crédit Mobil of that country.

With reference to the lengthened discussion which has been carried concerning Mr. Bessemer's patent, the Austrian inventor congratula himself upon his process having "made more progress in the workshops the sons of Vulcan than upon quiet and inoffensive paper;" and observe that "he relies more upon being amply remunerated, for the time an trouble it has cost him to perfect his process, by a long-continued royal than by endeavouring to sell all right, regardless of whether the purchas can realise a profit, or even make the process work at all." To this ti Mr. Bessemer, protected by seven patents, has failed to produce even product of "semi-usefulness," whilst the Uchatius process has been adopte by two of the principal firms in the United Kingdom—the Ebbw Va Iron Company and Messrs. Spence and Son. With all the blowing po sible, it is questioned whether malleable iron or steel can be produced, an whatever may be stated by the many—competent and incompetent—w undertake to attack or defend the principle, it must be acknowledged th the process has yet to be discovered. In describing the experiments mad by Mr. Lenz (the partner of Captain Uchatius), at Messrs. Rennie's work we referred so fully to the invention that further comment is almost nece less; a reference, however, to the *résumé* of the process, given by Mr. Av in *L'Ingenieur*, may be of interest. After inserting the report of Mr. Nozo, the substance of which has been inserted in the *Mining Journal*, is stated that cutting instruments made from the steel possessed qualiti which must be considered as absolutely remarkable, whilst welding did n in the least deteriorate the quality of the steel. The report of the Gover ment commission, consisting of Messrs. Thiria, Combes, and Lavallois, w have already published; so that the facts now before our readers prove th he value of the invention is acknowledged by some of the principal scien ttific and practical men both of England and the Continent.

The Ebbw Vale Iron Company, we understand, do not intend to mono polise the process they have been fortunate enough to secure, but are wil ing to offer every facility for its adoption by all who desire it, which ca only be considered as liberal and praiseworthy. This company has alread granted several licenses on very moderate terms, which, at once, give th licensees an opportunity of realising large profits, and bringing cast-ste into the market at a low price, and thus allow consumers, as well as manu facturers, to participate. Messrs. Spence and Son are the first in the field and, under the immediate direction of Mr. Lenz, are erecting the necessar furnaces, together with an apparatus for granulating the pig at a mer nominal cost, and the first outlay will be about 20*l.* It is calculated th this apparatus will deliver 1 ton of granules an hour, with the attendance of one man; and further, the granules are made direct from the blast-fur-

nace, saving the re-melting of the pig. Messrs. Spence and Son are already as well supplied with orders from manufacturers of machinery as many of the largest steel manufacturers, which is another proof of the value of the steel produced. Again, we learn that Mr. Krupp, of Essen, in Westphalia, who was formerly one of the most strenuous opponents of the principle, has satisfied himself by personal attendance at the experiments that the new process is of the greatest practical utility, and it is stated is now in negotiation for a license for Germany, although Messrs. Friedr. Huth and Co., another iron-making firm of the greatest respectability, has, we believe, already concluded the contract for that country.

The Ebbw Vale Iron Company intend, it appears, to confine themselves more particularly to the manufacture of rails, and they are now making great preparations which would seem to justify us in our view, and it has been proved that the strength of rails from the Uchatius steel is three times greater than that of best iron rails of similar weight; it is calculated that a very marketable rail may be produced of 50 per cent. less weight, whilst there will still be 50 per cent. increase in strength. The steel welds so excellently that when employed for tyres, of which Messrs. Spence and Son have manufactured many, it entirely obviates the necessity for casting in one piece, as patented by Mr. Krupp, as it can be rolled to the section of the tyre, and welded with the greatest ease at a much lower rate, but without in any way lessening the strength.

From recent experiments at Vienna, it was found that the resistance of the Uchatius steel as a gun metal, on a square foot in section, was 1450 cwts. against 300 cwts., which was the resistance offered by the best Austrian cast gun irons. It is necessary, however, to remark that all castings for guns should be made almost out of one crucible, as ingots made out of different crucibles, from their contents being necessarily liable to have received more or less heating, &c., have a trifling influence upon softness and hardness, and from the difference of cooling of the several parts the straightness of the gun is not always perfect; although, by following these simple means the most infallable accuracy may be secured in the flight of the shot or shell. As this is but the German opinion, we should think experiments at Woolwich would be of interest to science, and of advantage to the country.

COAL AND IRON—EXTRAORDINARY RESULTS.

Lord Sheffield, in his observations on the American States, published in 1783 (now 70 years ago), thus writes:—"If Mr. Cort's ingenious and meritorious improvements in making and working iron, and the improvements of the steam-engine by Messrs. Boulton and Watt, should succeed, they would be of more value to Great Britain than thirteen colonies." The following statement will show how Cort's improvements in the making of iron have progressed since his patents in 1783 and 1784:—

	S. Wales.	Staffordsh.	Shropsh.	Scotland.	Gt. Britain.	Coal.
1782 .....Tons	—	—	—	—	17,350	—
1788	5,200	4,500	23,100	7,100	52,200	241,500
1855	1,042,776	1,053,489	151,720	1,082,640	4,399,836	19,249,282
Increase	1,034,576	1,048,980	128,620	1,012,640	4,344,636	19,007,782

Thus, in the year 1855, the increased make of pig-iron was 4,344,636 tons, or 1,344,636 tons more than the whole make of all other countries united, as reported by Mr. Kenyon Blackwell. The increased consumption of coal, including rolled iron, was 19,007,782 tons—total make of rolled iron, 2,000,000 tons; and the whole make for the last 68 years 30,000,000 tons. Mr. Routh, formerly one of the firm of Richard Crawshay, at Cyfartha and Thames-street, and now the managing director of the New British Iron Company, states that the cost of foreign iron, including duty, 6*l.* 13s. 4d., averaged, in 1812, 37*l.* 6s. 8d. per ton; that the average contract price of British rolled iron was 24*l.* per ton; thus saving the Government for naval purposes alone, 13*l.* 6s. 8d. per ton, and that every ton of iron used for the Navy was rolled by Cort's grooved rollers. But Mr. Routh adds, "the saving to the country at large is 30*l.* 13s. 4d. per ton; because the total cost of British iron is composed of materials abundant, and otherwise useless here, and of British labour." The firm of Messrs. Crawshay and Co. cannot have realised much less than 2,000,000*l.* sterling by the gratuitous use of Henry Cort's patents, for which the firm subscribed, in 1811, 10*l.* 10s. each, the father of Sir Benjamin Hall, Bart., M.P., being at that time one of the firm. The saving to the country at large by 30,000,000 of tons of home-made rolled iron, at 30*l.* 13s. 4d. per ton, is not less than 920,000,000*l.* sterling, out of materials previously good for nothing, and by British labour, including, probably, the maintenance and clothing of more than 2,000,000 of people.

Mr. Robert Stephenson states, in his opening address as president of the Institution of Civil Engineers, that 14,000,000*l.* was paid to Parliamentary agents, solicitors, and engineers, for 45 Acts of Parliament for railway companies; and if to this be added all the charges since for the last 25 years for similar services, probably the whole amount divided has not been less than 50,000,000*l.* sterling. The saving by railway conveyance alone, Mr. Stephenson says, is 40,000,000*l.* annually; the consumption of iron, 3,000,000 tons; 200,000 tons of old rails re-rolled every year; and the yearly demand for new iron 20,000 tons. If, therefore, for the last 20 years the annual saving be estimated to average only one fourth, the total saving would be 200,000,000*l.*, making the aggregate saving with the total make, 1,120,000,000*l.* sterling, and if to the annual saving of 40,000,000*l.* be added the saving on 2,000,000 tons of iron made at 30*l.* 13s. 4d. per ton, the annual progressive saving by railways and rolled iron alone is not less than 101,333,333*l.* sterling.

M. Rouher, the Minister of Public Works, in his report on the railways in France, observes, "The commencement of the year 1855 was marked by new and important concessions. Districts for a length of time devoid of any rapid means of communication have been enabled to enjoy this blessing, which in our modern civilisation has become an essential condition of prosperity, and almost of existence for a country." Thus France, and all other countries now using railway conveyance, will be found like Great Britain, more indebted for wealth and power to the inventions of Henry Cort than to the inventions of any other individual in the history of the world.

In Scrivenor's work on *Iron*, page 269, he gives the following remark from some American writer:—"If coal and iron have made Great Britain what she is—if this have given her the power of 400,000,000 of men, and impelled the manufactures which have made us, like the rest of the world, her debtors, why should not we, with at least equal advantages, make them the instruments of our own independence."

A competitor for a share of the honours given to the Abbe Paramelle, as a hydroscope, or discoverer of hidden springs of water, appears to have started up in the person of a simple miner, named Gautherot, of the village of Velloxon (Haute-Saone), who, after making himself known by his discoveries in different parts of France, went some months since to Algeria, and discovered several subterranean springs in the neighbourhood of Oran, Arzew, Mascara, Mostaganem, and other places. The Minister of War, on hearing of his success, confided to him, in the course of last summer, the mission of proceeding to Constantin, where every facility for his researches were placed at his disposal On the day after his arrival he found a spring about 12 metres below the surface, at only 100 yds. from one of the gates of the town, and since that time he has discovered other springs from which a supply of from 4000 to 5000 cubic metres of water every twenty-four hours may be brought into the town.

THE METAL TRADES.—A very useful Chart, prepared by Mr. Johnston, metal merchant, of Glasgow, is now ready: it contains, amongst other information of the greatest interest to all connected with the metal trades, an elaborate diagram, showing at one view the prices of the principal metals during the past 16 years, the Birmingham wire and metal guages and the modern Belgian zinc guage, the weight and thickness of lead piping of various diameters, &c., thus forming a valuable work of reference for the counting-house of the iron merchant or broker. Copies may be had at the office of the *Mining Journal*. Price: Mounted, on rollers, 21s.; on plain sheet, 15s.

IRON METALLURGY.—Mr. S. B. Rogers, of Nant-y-Glo, Monmouthshire, has in the press, for publication in December, a TREATISE ON IRON METALLURGY, illustrated by steel plates, with suggestions for many essential improvements in the manufacture of iron, and a more perfect system of conducting extensive iron-works. A series of elaborate analytical tables connected with iron-making materials will be added to the work, the importance of which can hardly be over-estimated at this time, from the high scientific acquirements and great practical experience of the author. To be published at the *Mining Journal* office, price 35s.; to subscribers, whose names will be received at our office, 30s.

NUMERICAL ERRATA IN TEXT-BOOKS.

TO THE EDITOR OF THE MINING JOURNAL.

SIR,—Your Journal being always open to any communication which tends to the advancement of Science, I venture through its columns to direct attention to a subject of considerable importance—the numerical errors unfortunately so common in many books of reference.

It cannot be imagined that they arise from any lack of ability in the authors or editors of the books in question, but rather from a want of due care in the revision of the "proofs," or in transcribing the articles; but, nevertheless, they must be held responsible for the errata in their works, and I conceive that, were this doctrine ignored, we should have greater cause of complaint than even at present; and surely it is bad enough that errors, which a very superficial examination would render apparent, committed by one author, should be copied by two others. An instance of this will be given by and by.

The trouble, and probably also the expense, that this inattention is liable to entail on the public is so great, that I shall be excused, I trust, for detailing several instances of the class of *errata* I have alluded to; and the same reason should induce compilers to be more careful in the examination of their works.

With this much by way of preface, I will proceed to lay before your readers one or two examples I have recently met with; and although the number of works which will be here mentioned as containing numerical errors is by no means great, it must not be inferred that these are more inaccurate than the average, for the majority of them are evidently written with care, and are of deservedly acknowledged value. It is simply with a view to their improvement that I have penned this communication, as some of the *errata* I shall mention may be still unknown to their authors.

The first I shall point out are to be found in the Table of the Linear Expansion of Metals, from 32° to 212° Fahr., as given in *Gmelin's Chemistry* (Cavendish Society's translation, vol. i.), *Phillips's Metallurgy*, and *Tomlinson's Cyclopædia of the Useful Arts*;—art. Metals. Which of these gentlemen can assume the honour (?) of originating these mistakes, I know not, or whether any of them, but thus they stand—

Lead.....	0·00284836 = $\frac{1}{351}$	Zinc, hamd...	0·00310833 = $\frac{1}{322}$
Zinc, cast....	0·00294167 = $\frac{1}{340}$	Gold.....	0·00155155 = $\frac{1}{647}$

These fractions should stand thus:—$\frac{1}{351}$, $\frac{1}{340}$, $\frac{1}{322}$, $\frac{1}{647}$.

It is evident, I think, that in two out of three of this series of *errata*, the mistakes arise from copying without care, for one moment's calculation, or even attentive reading, would have made them apparent, and prevented their repetition.

For another instance, turn to the Table of the Melting Points of the Metals, in *Phillips's Metallurgy*, and it will be seen that the freezing point of mercury is given as 39° Fahr.: it should be —39°. Thus a mistake of 78° is committed.

Turn again to page 173 of the same work, and in the fifth line from the top will be found the following erratum:—$\frac{0·75}{5·5} = 0·154$. The correct expression is = 0·136.

Then refer to *Tomlinson*, page 717, on the same subject—the quantity of water which would be converted into vapour by the heat required to melt 1 lb. of ice. It will be found that the numerator, which he assumes to be the correct one, is 0·79, instead of 0·75, as before; and yet he gives the result, = 0·154, as does Phillips: whereas the correct figures would be = 0·143.

Again, on page 126 of *Phillips's Metallurgy* will be found another very serious mistake—a whole table of the quantity of ash in different woods is stated incorrectly. It is given as a table of the *percentage* of ash in wood, whereas it merely represents the ash in one part, so that the results must be multiplied by 100 before they express the facts that they are stated to do.

On page 129, two lines from bottom—analysis of peat—the quantity of hydrogen is given as 0·93: it should be 5·93.

Many other instances might be pointed out, but these are deemed sufficient; and if, through these remarks, the errors I have mentioned be rectified in the next editions of these valuable works, and more care taken to prevent the repetition of such easily avoidable errata, I shall feel that your space has not been unworthily occupied, and that I have been of some slight service to the cause of Science. R. S. ROPER, F.G.S.

METALLIC HOLLOW YARDS FOR REEFING SAILS FROM THE DECK.—Mr. Samuel Dyer, shipowner of Bristol, whose patent for improvements in reefing, furling, and setting, the sails of ships, was described in the *Mining Journal* of Nov. 8, has just specified a second patent for a similar object (obtained through Mr. Campin, the patent agent). In this case, however, instead of an ordinary yard, with a roller attached, Mr. Dyer purposes to use a hollow metal yard, constructed and fitted as set forth in his specification, from which we extract the following description:—"The said invention consists in effecting the reefing, furling, and setting, the sails of ships and vessels from the deck of the ship or vessel, or in other convenient position, and also in protecting sails as aforesaid, by adapting and using for such purposes a hollow or tubular yard, with an opening to allow the sail to pass into and out of the same, such yard being provided with a roller, which may be termed a rolling jackstay, being similar to the rolling jackstay described in the Specification of the Letters Patent granted to me on April 30, 1856 (No. 1023), the said roller extending from one end to the other of the interior of the hollow yard, upon which roller the sail is wound (when reefed or furled) by the aid of suitable pulleys or wheels appertaining to the said roller, and the tackling in connection therewith (which may communicate with, and be worked on, the deck), and from which roller the sail may be unwound (for setting, &c.) by the same agency. By this means the whole of the sail may be snugly encased within the hollow yard, and preserved from injury from wet, the chafing of ropes and rigging, and so forth. Although it will be obvious from the foregoing that this invention is not restricted to any particular yard of ships and vessels, yet, for convenience of explanation, I now exhibit and describe its application to a topsail yard, remarking that, for fixed, or lower yards, the same action as that which is described for furling the topsail, can be adopted and used for reefing and furling the lower sails of the ship or vessel attached to such yards, and usually termed 'the courses.' The yard has at each end a collar, with several eyes or rings affixed thereto. At each end of this hollow or tubular yard I have two annuli, which are secured inside the said yard by screws which have projecting heads, which screws, on being removed, will allow, when required, the said annuli to be removed, as also the collar with the eyes or rings (which collar is secured between the said projecting screw heads), when the rolling jackstay may be detached from the yard. Next to this collar, and nearer the end of the yard, are sheaves, two being preferred, these sheaves being secured to the top of the yard by bearing pieces provided for their axes, as shown. Within this hollow or tubular yard is the roller, or rolling jackstay above referred to, which passes through the whole length of the yard, and out through the annuli at each end of the yard, at each end of which roller, or rolling jackstay, just outside each end of the yard, is keyed or secured a studded sheave. This roller, or rolling jackstay, and the studded sheaves are the same, as regards construction and office, as the roller or rolling jackstay and studded sheave described in the Specification of my former Letters Patent, of April 30, 1856 (No. 1023), aforesaid, and such studded sheave is in the same position as regards the rolling jackstay as in my former patented invention. Within side this yard are friction rollers. To secure this yard to the mast, on the upper part of the sling of the yard I fix a tie block, through which the tie chain or halyards is or are rove, and on each side of such block I fix a block nearly the same size as the tie block through which my reefing and furling ropes and chains are rove, over a plain sheave in the said block, for the purpose of rotation; these two chains also reeve through two cleats, having plain sheaves at the masthead, one on each side of the tie sheave. The studded sheave fixed to the roller, or rolling jackstay, causes the same to rotate when acted on, it being free to turn in its bearings in the ends of the hollow or tubular yard, and on this roller the sail which is unbroken or unslit is wound." The working of the sails is effected from the deck of a ship or other convenient position, by means of the reefing and furling ropes and chains before described in similar manner to that set forth in the specification of Mr. Dyer's former patent, before alluded to.

IS AERIAL NAVIGATION PRACTICABLE?—Mr. Joseph Pitter, of High-street, Borough, in a letter to the *Mechanics' Magazine*, says—"Since I last appeared in print, I have made discoveries which give me the command over the whole invention. What these discoveries or inventions are, I shall hereafter proceed to indicate, that my assertion on this point may not go altogether untested. In connection with my studies upon this interesting, though neglected, department of science, I have given some outward signs of what I was about. In regard to the general principles, I have spoken pretty freely, nor have I altogether concealed my knowledge—real or imaginary—as to the application of those principles. I have lectured on my favourite theme, and though a prophet has no honour in his own country, yet I have enjoyed attentive audiences in my native town, and have in some cases produced an unexpected impression. In the year 1850, or early in 1851, I commenced a model of my Archimedean balloon, according to the plans published in June, 1848. After many months of occasional working on this model, I completed it, and I believe those who have seen it are not disposed altogether to deride my pretensions as an aerial navigator. Nor is this the only effort I have made. Conscious of the difficulty as to a proper motive power for the purposes of aerial navigation, I turned my attention some two or three years ago to the subject of a new motive engine, and in the course of the year 1855 I succeeded in making a wooden model, showing the construction and working of an entirely new motive engine, to be worked by a chemical agent. My engine resembles a steam-engine, except that the more weighty parts are dispensed with. I have no boiler, no furnace, and no steam-chest—in fact, I have little else than the cylinders and the usual amount of valve gear. The material employed occupies much less space than coal, and, power for power, will probably cost but little more. The engine itself will be incomparably lighter than the steam-engine, and much less bulky. It would not only be well adapted to the purposes of aerial navigation, but would be of immense value in ocean voyages. I admit that my engine may be a delusion, and my aerial projects impracticable; but still my opponents must also admit that although I may be in error, it is also possible that I may be right and they in the wrong."

*** TAPPING'S PRIZE ESSAY ON THE COST-BOOK SYSTEM, enlarged and augmented, with Notes and an Appendix, can be had at the MINING JOURNAL office, 26, Fleet-street,—Price 5s.

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Incorporated by Act of Parliament.

Capital £65,000, in 6500 shares of £10 each.

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BANKERS—The City Bank, London.
SOLICITOR—J. K. Smith, Esq., Newnham, Gloucestershire.
ENGINEER—R. B. Grantham, Esq., F.G.S.

There are few undertakings that offer so many inducements for the investment of capital as the above railway. Its course is through the Forest of Dean, one of the richest and most productive mineral districts in England. It is intended to be constructed from Foxes Bridge, in the centre of the Forest, to the South Wales Railway, near Awre; and to Brimspill on the River Severn, being about eight miles in length; seven miles of it will pass through the property of the Crown, in whom the lordship of the Forest of Dean is vested; and the Government has not only given its express sanction, but also its financial assistance to the undertaking.

There is no engineering difficulty on the line; no tunnel or viaduct, nor any work of magnitude; and its cost will be much below that of the general average of English railways, as the contract has been taken by a responsible firm at such a price as to warrant this assertion.

The engineer has been for some months past actively engaged, with a large staff of men upon the line, preparing the surveys, &c., for an early commencement of the permanent works.

It will be almost exclusively a mineral line until the branch railway that are now being promoted, in anticipation of its construction, are completed, when it will form the connecting link between Herefordshire and South Wales, by a branch from its terminus at Foxes Bridge to Hereford, and between Monmouthshire and London by an extension to Coleford, and there to connect with the Monmouth, Usk, and Pontypool Railway.

Its principal source of traffic will be coal. It has been estimated by Mr. Atkinson, the deputy-gaveller of the Forest, that the coal in the principal seam amount to the enormous quantity of 180,000,000 tons. The richest and most productive of these seams lie in the immediate vicinity of, and can only be served by, this railway. The extent of the coal field through which this line runs is upwards of 4000 acres, containing in all the seams about 70,000,000 tons, capable of supplying to the railway a traffic of 500,000 tons per annum for 140 years. Pits are already opened, and others in progress of opening, at a great expense, along the line, by coalmasters, in order to be in readiness to send a large supply to market upon the completion of the railway.

A large additional traffic must be expected from the enormous amount of iron ore, fire-clay, paving, tiling, or limestone; also, navy timber, pit or cord wood, the other products of the Forest which must find an outlet by this railway.

The following quantities are a very moderate estimate of the expected traffic:—

300,000 tons of block coal, averaging 1s. per ton in the whole distance.	£15,000	0	0
150,000 tons of other produce, averaging 9d. per ton ditto.....	5,625	0	0
Total	£20,625	0	0
Deduct 50 per cent. for working expenses	10,312	10	0
Total	£10,312	10	0

Yielding on a capital of £80,000 (which will include plant and sundries), more than 12 per cent. to the shareholders.

An allotment of the few remaining shares will be made on the 23d day of Jan. next. Forms of application can be obtained at the offices of the company, 36, Cannon-street; or of The City Bank. SAMUEL H. WAGSTAFF, Sec.

Offices, 36, Cannon-street, London.

THE MONS UNITED COLLIERIES COMPANY (LIMITED).

Capital £1,000,000, in 100,000 shares of £10 each.

Deposit £2 per share on allotment.

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In Paris.....Messrs. Charles Laffitte and Co.

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BROKERS—Messrs. Joshua Hutchinson and Son; Messrs. Laurence, Son, and Pearce.
SECRETARY—T. R. Preston, Esq.

TEMPORARY OFFICES,—46, MOORGATE STREET.

The object of this company is to develope the resources of certain collieries, situated in the most central and best portion of the well-known coal basin of the Mons, in Belgium. They comprise two distinct sections, of which part is already in full working operation, and the remainder consists of concessions from the Belgian Government, granted on condition that the coal shall be worked.

The unworked concession, known as Bonne Victoire, situated at Asquillies, and those applied for, severally called Mons Nimy, and Ghlin occupy an area of 18,000 acres; 155 well ascertained coal seams run through their whole extent.

The collieries in full work are five, viz., Bonne Veine, Bonne Espérance, Seize Actions, Ste. Cecile, and Midi du Flenu. They comprise an area of 2000 acres, with the right of working 62 seams of coal. It is calculated that their produce could be largely increased, within four years, at an outlay of £20,000. (See engineer's report.) The plant and other stock are ample, well constructed, and substantial; the engines now at work give an aggregate power of 939 horses. These collieries are now yielding a minimum net profit of £40,000 per annum, (See report) and it is agreed that a preferential interest of 6 per cent. per annum on the capital, now to be raised, shall be the first charge on these returns.

The confidence of the vendors of the working collieries, in the success of their new undertaking, is further shown by their agreeing to accept in part payment of their property, 20,000 shares, (representing £200,000) denominated B shares: which though considered as paid-up, are only to receive dividends in proportion to the amount paid-up on the A shares, offered to the public. The remainder of the purchase money, consisting of £254,000 is to be paid in cash, out of the first funds of the company, at any time within two years from the incorporation of the company. Two-thirds of the above 20,000 shares, will be annulled, should the new concessions, contrary to expectation, fail in yielding coal of a good commercial quality, and this proportion of the shares in question will not be handed over to the sellers until such produce be realised.

The coal, is generally of a semi-bituminous quality. It is loaded at the several pit-mouths into the waggons of the Northern Railway of France, for conveyance to Paris and the towns and manufactories along the line, at which there is a great demand, and also into those of the Haut et Bas Flenu Railway (which traverses the collieries of the district, and connects them with the network of the state railways of Belgium) for the supply of the towns and the extensive manufacturing districts of Flanders: the greater proportion of the coal, however, is, conveyed by the Condé Canal, on the banks of which there are extensive sheds, where the boats are loaded. The existing facilities for transit will be further extended by the railway, now in construction between Mons, Haumont and Maubeuge. The constant demand by railways, iron works, gasworks, and for other manufacturing and household purposes, is more than sufficient to absorb, at all times, the utmost produce of the collieries.

At the request of the directors, a detailed report on the present state of the collieries at work, and to be worked, was prepared by the eminent French civil engineer, Mr. F. N. Dudot, which report has been confirmed by Mr. H. Gain, a local mining engineer, of great experience. Subsequently Mr. Charles Manby, C.E. was deputed to verify the statements made. A majority of the directors have also lately made a personal visit to the collieries, and having taken every means to satisfy themselves of the soundness of the undertaking, and the truthfulness of the above reports, they now feel justified in inviting the investment of capital in the association.

The capital of the company is divided into 100,000 shares of £10 each, which are sub-divided into two classes,—viz., A preferential shares, and B free shares. The deposit will be £2 per share, and the first call of £2 per share will be due on June 1, 1857.

The vendors consent to waive their claim to any dividend on their B shares, till 6 per cent. shall have been paid on all the A shares, thus, in fact, giving to the A shareholders a preferential dividend to the amount of 6 per cent.; and in the event of the winding-up of the company's affairs, the amount paid on the A shares will be repaid to their holders before any payment is made on the B shares.

Dividends will be paid half-yearly at the company's bankers in London, Mons, and Paris, upon whatever amount may be paid-up on the several shares.

The administration of the company's affairs in Belgium is carefully provided for.

The various reports alluded to in this prospectus have been printed, and may be obtained on application at the company's office, as also a chart, shewing the position of the collieries and the new concessions.

Applications for shares must be accompanied by the bankers' receipt, for a sum equal to 1*l.* upon every share applied for. The deposit will forthwith be returned on such shares applied for as may not be allotted.

Forms of application may be obtained at the brokers, and at the offices of the company, 46, Moorgate-street.

Each applicant for shares will be required to pay into one of the bankers of the company, one pound (£1) per share, on the number of shares applied for, in part payment of the deposit of £2, in exchange for which a voucher will be given. In the event of the directors allotting less than the whole number applied for, the amount paid in will be appropriated towards the deposit of £2 per share payable on those allotted. Should no allotment be made to the applicant, the money lodged at the bankers will be forthwith returned free of charge.

FORM OF APPLICATION FOR SHARES.

To the Directors of the Mons United Collieries Company (Limited).

GENTLEMEN,—Having paid into the hands of Messrs. the bankers of the company £ to your credit, I request that you will allot me preferential A shares of £10 each, in the capital thereof. I agree to accept such shares, or any less number that may be allotted to me, to pay the remaining deposit, to execute the articles of association or a printed copy thereof when required, and in all other respects to conform to the provisions of the Joint-Stock Companies Act, 1856. In the event of my failing to preform any of these stipulations I agree to forfeit the deposit now paid by me to your bankers and authorize you to cancel the allotment

I am, Gentlemen, your obedient Servant,

Name in full.....
Residence in full.....
Profession or occupation .....
Place of business, if any .....
Date .....

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Weight of wood	Cwts. 0 0 18 0	Cwts. 0 0 10 0
,, coal	11 2 0 0	9 3 0 0
,, coke	0 2 0 0	0 1 26 0
,, ashes	1 0 6 13	1 0 10 3
,, clinker	0 0 11 3	0 0 10 1

It is remarkable for its great evaporative power, the effect of intense heat; its freedom from clinker, dust, and ashes; leaving no soot deposit, and being perfectly free from smoke.

Steam-packet companies, merchants, and others interested in steam navigation, are respectfully informed that the above coal, screened or hand-picked, can be supplied on board ship at Cardiff at the market price of the day per ton; payment by approved bill at two months, from date of the bill of lading, or 1¼ per cent. discount for cash.

The "Small (round) Coal" is admirably suited for maltsters, lime-burners, and the river steamers; at a very low price per ton, nett cash.

A FIRST CLASS AGENT WANTED for the Ports of LIVERPOOL, SOUTHAMPTON, BRISTOL, and PLYMOUTH. JOHN DAVID BARRY, Managing Director.

Offices, 4½, A, Warnford-court, London, Nov. 5, 1856.

Samples with THOS. POPE and Co., Coal Exchange; and at this office. 147

THE LITTLE DOWN AND EBBER ROCKS MINERAL MINING COMPANY (LIMITED).

Capital £50,000, in 10,000 shares of £5 each.

Prospectuses, rules of the company, forms of application for shares, and all information connected therewith, obtainable at the company's registered office, No. 44, Leicester-square, London. 141

IVYBRIDGE SILVER-LEAD MINE.—This important and valuable property, which to bring into the present active state of working has cost £20,000, with all its machinery and plant, comprising two steam-engines, a 50-in. by 10-ft. cylinder, and a 24-in. by 10-ft. for hauling and crushing, connected to two shafts sunk relatively to the depths of 78 and 68 fms. (but from which the exploratory levels have hardly been driven to any appreciable extent, so that the intrinsic operation may be said to have just commenced), is now offered to the public, in one lot, in consequence of many of the shareholders declining to pay further calls, and is to be tendered for by private contract, on or before the 31st inst. The conditions of sale require a deposit of 30 per cent., and the balance in four and six months.

It is believed this valuable property, which has cost £20,000, can be obtained for £3500, and it is proposed to form a company, with limited liability, to purchase it, in order to carry out certain explorations, which can be completed for a comparatively trifling further outlay, with every prospect of satisfactory results in a short period.

By reference to the section of the mine, it will be perceived that the extension of one or more of the northern levels beyond the uncongenial band of rocks in which they are at present, towards the metalliferous slate, subjected to volcanic influence, is the object to be attained; and as the extension of these levels would be through soft and easy ground, this object could be attained in a few months, at an estimated cost of £900 to £1200.

On reference to the section of this mine the value of the lode will be perceived, when in productive strata, lead and silver ores to the amount of £3446 having been taken out of the small extent represented by the blue colour, and a former company having raised lead ores to the value of £3577 from the portion represented as old workings. From these lateral and uncertain bands of metalliferous rock, composed of dark clay-slate, interlined with calcareous spar, the northern levels have entered into a layer of wavy and disturbed strata of a non-metalliferous character, which rendered the operations discouraging, especially as the shaft was intersecting the same layer in its dip southward, and consequently with the same results. Had one of these levels—viz, the 58th—been prosecuted to the extent of 30 fms., it would have passed this inferior ground, and have entered a much more certain stratum for metal; from being in connection with an elvan course in that direction, the deposits of ore near the shafts are probably but secondary ones.

The geological position of the Ivybridge district is similar to the best lead-bearing ones of the west and south of England. Its north and south lodes, emanating from the great granitic mass of Dartmoor, pass through the killas, composed of broad bands of clay-slate, of a variety of characters, and greenstone and other volcanic rocks; also, east and west, indications of copper lodes.

The proposed company will be in 8000 shares of 10s. each, 5s. to be paid on each share as deposit (for the purchase of the mine, machinery, and materials for £2500—viz., 750*l.* down, 750*l.* in four months, and the balance in six months.)

The deposit will give £2000*l.* This will pay the £750 on account of purchase money, and leave £1250 working capital to explore the mine to points where it is anticipated new discoveries may be made; this will take three months. Should such discoveries be made, then the remaining 5s. will be called up, to pay off the residue of the purchase money, and to work the mine. Should no discoveries take place, then the call of 5s. will not be made, but the mine, machinery, and materials will be sold off, to satisfy the unpaid purchase money, and the residue divided amongst the shareholders.

Upwards of 4000 of the shares are already subscribed for, and applications for the remaining 4000 will be received at the offices of Messrs. HANCOCK and SHARP, No. 20, Tokenhouse-yard, up to the 31st Dec. inst., and allotments made on payment of the deposit into the London and Westminster Bank, Lothbury. 148

Should the tender of the promoters not be accepted, the deposits will be returned without deduction.

TREBURGETT CROWAN CONSOLIDATED COPPER MINING COMPANY (LIMITED BY ACT OF PARLIAMENT).

SITUATE IN THE PARISH OF CROWAN, THE BEST MINING DISTRICT IN CORNWALL.

Capital £50,000, in 5000 shares of £10 each.—Deposit £5 per share.

OFFICES,—No. 9, AUSTINFRIARS, LONDON.

Applications are yet required for the 1500 shares unsold. 150

Prospectuses may be obtained at the offices of the company; or of the broker, PETER WATSON, Esq., 57, Threadneedle-street. J. G. CAMBELL, Sec.

FOX TOR ALVENNY TIN AND COPPER MINING COMPANY (LIMITED, under the Act of 1856).

Capital £50,000, in 5000 shares of £10 each. Deposit £5 per share.

£1 per share to be paid on application.

Applications for the 2500 shares unsold may be made in the printed form, and addressed to the offices of the company, 9, Austinfriars, where prospectuses can be obtained; or of PETER WATSON, Esq., 57, Threadneedle-street. 151

J. G. CAMBELL, Sec.

ELECTRO-CHEMICAL REDUCTION AND SEPARATION OF METALS FROM THEIR ORES.

By Her Majesty's Royal Letters Patent.

PATENTEES—Matt. French Wagstaffe, Esq., M.R.C.S., Walcot-place West, Lambeth; John William Perkins, Esq., F.C.S., Poplar-terrace, Poplar. 152

Licenses can be obtained for the use and adoption of the process on application to the patentees, at No. 2, Poplar-terrace, Poplar; where demonstrations on a large scale may be witnessed, and where mine owners and others may send ore for treatment. Analyses and assays of small samples will be made at a nominal charge.

London, Oct. 17, 1856.

SLATE.—The BANGOR ROYAL SLATE COMPANY have now ON HAND a large assortment of ROOFING SLATES, BLUE and GREEN, of the usual sizes, which they are prepared to SUPPLY on the usual terms, for shipment from their depôt at Bangor, or to transmit by railway; also, SLABS of all sizes. Orders to be addressed to Mr. EDWARDS, manager, Royal Slate Quarries, Bangor. 153

SLATE SLABS AND ROOFING SLATES.—The PROPRIETORS of the NEW MACHNO SLATE and SLAB COMPANY (LIMITED) have, at great cost, made arrangements to convey their produce from their quarries near Ffestiniog to Conway, to obtain the great advantage of access to the railway, giving them the facility of executing orders without the slightest delay. They trust that making Conway their shipping port will not cause them to be confounded with those hitherto known as the CONWAY SLATES, as the MACHNO SLATES are ENTIRELY FREE from PYRITES, or any metallic substance liable to OXIDATION; and, from having been tested in Wales for at least half-a-century, are found to attain a degree of hardness, by exposure to the atmosphere, unknown in any other vein. The MACHNO SLABS are too well known to need comment, but the annexed valuable testimonial from Mr. Magnus, and also a strong chemical test to which they have been subjected, will better explain their quality:—

Pimlico Slate Works, Upper Belgrave-place, London, April 7, 1855.—GENTLEMEN: I very readily offer my testimony to the excellence of your slabs raised at the Machno Quarries. I prefer them to all others obtained in North Wales, with one exception, and that is much of the same quality as the Machno. The slabs can be obtained of large sizes, and of every requisite thickness. They are homogeneous in texture, strong, of good colour, free from spots and other impurities, pleasant to the tool of the mason, easily planed and moulded, and will bear exposure to a much higher degree of heat than slabs from any of the Carnarvonshire quarries.

Signed, G. E. MAGNUS.

To the Proprietors of the Machno Slate and Slab Quarries.

Liverpool, Oct. 18, 1855.—DEAR SIR: The experiments which I have tried on the specimen of slate, in reference to its capability of resistance to acids, enable me to pronounce it in every way capable of retaining boiling vinegar, without injury either to its own substance, or to the contained vinegar. A piece of the slate, weighing 95 grs., was exposed for 26 hours to the action of cold strong nitric acid; it was then boiled in the same acid for 20 minutes, and when washed, dried, and weighed, was found not to have lost perceptibly in weight. This I consider the most conclusive experiment.

Signed, GEO. C. HUSON.

Wm. Orme Carter, Esq., Machno Slate and Slab Company. 154

All communications must be addressed to the resident director, Mr. T. H. WHEELER, Conway, North Wales.

THE MECHANICS' MAGAZINE (published every Saturday, price 3d., stamped 4d., and in monthly parts) contains, in addition to a mass of interesting matter on scientific subjects, the SUBSTANCE of EVERY PATENTED INVENTION, together with all other current information concerning patents.

Messrs. ROBERTSON, BROOMAN, and Co. (Editors of the *Mechanics' Magazine*, established in 1823) UNDERTAKE the PROCURATION OF PATENTS for the United Kingdom and all Foreign Countries, and the transaction generally of all business relating to patents and the registration of designs.

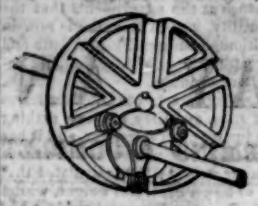
Printed instructions supplied gratis on application.

Costs of provisional protection, £10 10s.

Mechanics' Magazine and Patent Office, 166, Fleet-street, London. 155

TO MARINE ENGINEERS, SCREW SHIP COMPANIES, AND MACHINISTS GENERALLY.

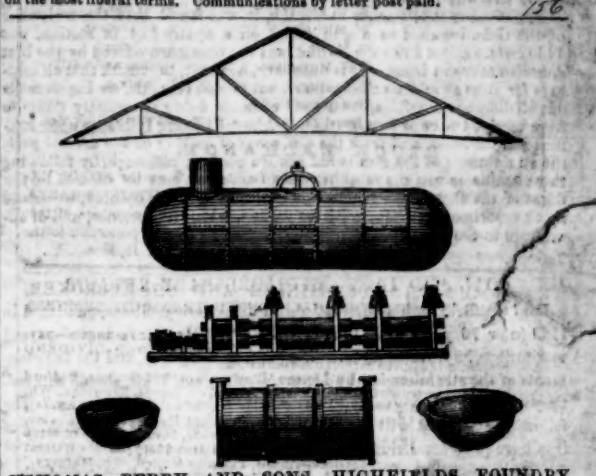
THE NEW PATENT MULTIPLE ROTATIVE GEARING.—This justly-admired invention contrasts with the ordinary toothed gearing, for which it is proposed as a substitute, and possesses the pre-eminent advantages of



COMPACTNESS, STRENGTH, DURABILITY, FREEDOM FROM NOISE and BACKLASH, UNIFORMITY and SMOOTHNESS of ACTION, REDUCED FRICTION, FACILITY for LUBRICATION and REPAIR, and virtually WITHOUT RISK of ACCIDENT, advantages unequalled in any other arrangement of gearing. It is proposed for all purposes where a change of speed is required, and is peculiarly applicable for screw propulsion.

The proprietors of the patent are prepared to GRANT DISTRICT and OTHER LICENSES for the manufacture of this gearing, or to ENTER INTO CONTRACTS for the adaptation of the invention to screw steam-vessels, or other machinery, upon application to their agent, No. 8, Hanover Chambers, Buckingham-street, Adelphi, where any further particulars may be obtained, and models and testimonials inspected.

The invention was honourably mentioned by the International Jury at the French Exhibition of 1855; and has been favourably noticed in the *Artizan* of June and July, 1855, and the *Mining Journal* of 8th December, 1855. Manufacturers treated with on the most liberal terms. Communications by letter post paid. 156



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PRICES.—Divisions on enamel dials indicating to 12, 20, 30, 60, or 80 lbs. pressure on the square inch, 55s. each; to 140 lbs. ditto, 60s. each; to 200 and 300 lbs. ditto, 65s. each. Vacuum Gauges, 55s. each. Any other divisions on dial can be made to order.

EVERY INSTRUMENT WARRANTED.

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HEMP AND WIRE ROPES OF EVERY DESCRIPTION.

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IMPROVED LIFTING JACKS,

MANUFACTURED BY

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The attention of parties who employ

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Is respectfully requested to the superiority of those annexed, over those hitherto in use.

IMPROVED RATCHET JACK.

HALEY'S PATENT LIFTING JACK.

160

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